Cambium Networks™

# EMBED FEATURE GUIDE

## cnHeat

Release 2.2

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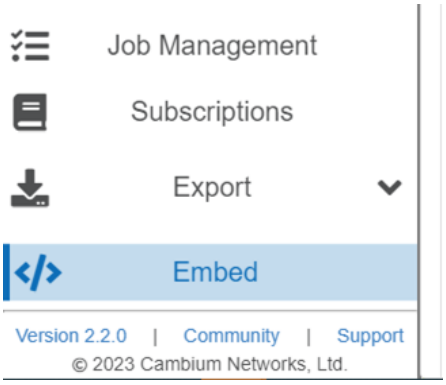
# Overview

cnHeat System Release 2.2 enables users to embed the map view of cnHeat into another web-based tool by using an iframe. It also allows for the manipulation of the various controls for the embedded map view. This creates the ability to integrate cnHeat into other tools (such as an NMS, or CRM). It also allows WISPs to embed cnHeat into their website for web lead generation.

# Usage

Users with either **Admin** or **Write** permissions in cnHeat have an **Embed** option in the bottom-left corner of the cnHeat control panel as shown in Figure 1. Click the **Embed** option to open a configuration pop-up.

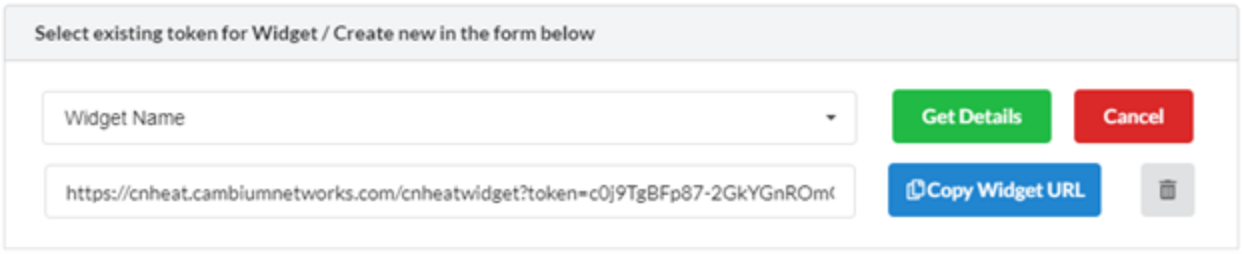
Figure 1: *Embed option*




## Working with tokens

The user is allowed to create embedded instances that are associated with a token when saved. The tokens are used to encapsulate the permissions and configuration for each embedded instance.

Figure 2: *Working with tokens*




### Creating new tokens

To create a new token, fill out the configuration form and click the **Create Token** button at the bottom. If a token is already loaded, then click the **Cancel** button in the top-right to clear the form to prepare it to generate a new token.

### Loading existing tokens

To load a token, select the name of the token from the drop-down and click the **Get Details** button. A URL will be generated which can be used as the source of an **iframe** tag or can be copy/pasted into a browser to test settings.

### Deleting existing tokens

To delete a token, select the name of the token from the drop-down and click the trash icon.

# Configuration

## Name

Defines the friendly name of the configuration instance.

Figure 3: *Name*

## Domain Whitelist

Defines a whitelist of (comma separated) domains with access to load the token instance. This whitelist protects the token so that it cannot be loaded outside of the specified domains. When it is accessed from an unauthorized domain the user receives an error that states “Note: Coverage validation is unavailable at this time.”

**Note**

When loading the tokenized URL directly into the browser (outside of an iframe), cnHeat attempts to authenticate the user based on project-level user permissions. Valid users successfully load the URL, and invalid users see the error message "Note: Coverage validation is unavailable at this time".

Figure 4: *Domain Whitelist*

## Description

Defines the description of the instance for user reference.

Figure 5: *Description*

# Lead Generation

## Enable Web Lead Form option

Enables the web lead generation feature.

Figure 6: *Enable web lead form*

When enabled the user is presented with a form that they must fill out before coverage is shown. The information collected in the form in conjunction with their Lat/Lon is provided to the operator as a web lead.

**Note**

Enabling this feature removes the ability to display the height and signal strength sliders in the embedded instance.

An **Email** field is presented at the bottom of the form. Any received web leads are then emailed to the provided emails with JSON and XML attachments of the data for programmatic parsing. Additionally, the user can specify one of a handful of integrated 3rd party systems to push the leads.

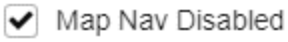
## Map Nav Disabled option

**URL**: “disableMapNavControl” (true|false)

**Example**: disableMapNavControl=false

Disables pan and zoom functionality.

Figure 7: *Map Nav Disabled*



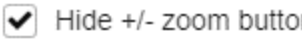

## Hide +/- zoom buttons

**URL**: “showMapZoomControl” (true|false)

**Example**: showMapZoomControl=false

Hides the plus and minus zoom controls in the bottom-right corner of the map view.

Figure 8: *Hide +/- zoom buttons*



## Latitude

**URL**: “lat”

**Example**: lat=33.875

**Note**

Must be used in conjunction with “lng”.

Defines the latitude of the center point of the map view when it is first loaded. The Latitude/Longitude works in conjunction with Zoom to set up the initial view of the map.

Figure 9: *Latitude*

## Longitude

**URL**: “lng”

**Example**: lng=-98.321

**Note**

Must be used in conjunction with “lat”.

Defines the longitude of the center point of the map view when it is first loaded. The Latitude/Longitude works in conjunction with Zoom to set up the initial view of the map.

Figure 10: *Longitude*

## Zoom

**URL**: “zoom” (1-23)

**Example**: Zoom=18

Defines the zoom when the map view is first loaded. The zoom works in conjunction with the Latitude/Longitude to set up the initial view of the map. The valid values for zoom are 1-23.

Figure 11: *Zoom*

### Zoom 2

The following figure shows an example of the resolution that is expected at Zoom 2.

Figure 12: *Zoom 2 view*

## Zoom 19

The following figure shows an example of the resolution that is expected at Zoom 19.

Figure 13: *Zoom 19 view*

**Note**

The Latitude, Longitude, and Zoom parameters serve as the default (fall-through) settings when **Enabled Web Lead Form** or **Define Location for Point Analysis** are not specified. Enabling either of those settings will override the default Latitude, Longitude, and Zoom settings.

## Display Map Type

**URL**: “showMapTypeButton” (true|false|locked)

**Example**: showMapTypeButton=false

Toggles the display of the button in the upper-left corner of the map view to select either the Map or Satellite view.

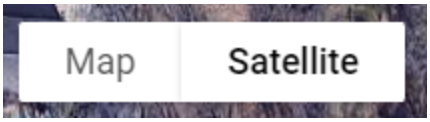
Figure 14: *Display Map Type*

This toggle button can be one of the following:

- (True) > Shown/Controllable
- (False) > Hidden/Not Controllable
- (Locked) > Shown/Not Controllable

**Note**

The default setting is configured independently.




## Map Type

**URL**: “mapTypeButton” (roadmap|satellite)

**Example**: mapTypeButton=satellite

Defines the default option for the Map/Satellite button.

Figure 15: *Map type*

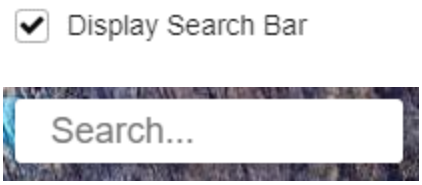
## Display Search Bar

**URL**: “showSearchBar” (true|false)

**Example**: showSearchBar=false

Displays the address search bar in the upper-left corner of the map view.

Figure 16: *Display Search Bar*




## Display LOS/NLOS Button

**URL**: “showPropagationButton” (true|false|locked)

**Example**: showPropagationButton=false

Toggles the display of the LOS/NLOS button in the bottom-left corner of the map view.

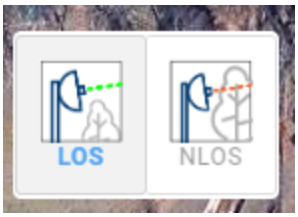
Figure 17: *Display LOS/NLOS Button*

This toggle button can be one of the following:

- (True) > Shown/Controllable
- (False) > Hidden/Not Controllable
- (Locked) > Shown/Not Controllable

**Note**

The default setting is configured independently.

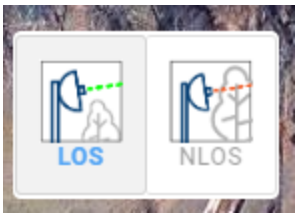



## Propagation button

**URL**: “propagationButton” (los|nlos)

**Example**: propagationButton=los

Defines the default option for the LOS/NLOS toggle button in the bottom left corner of the map view.




## Display Height Reference Button

**URL**: “showHeightRefButton” (true|false|locked)

**Example**: showHeightRefButton=false

Toggles the display of the AboveGround/AboveClutter button in the bottom-left corner of the map view.

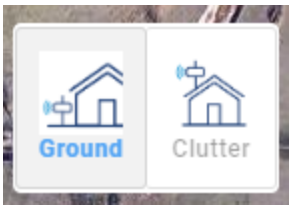
Figure 18: *Display Height Reference Button*

This toggle button can be one of the following:

- (True) > Shown/Controllable
- (False > Hidden/Not Controllable
- (Locked) > Shown/Not Controllable

**Note**

The default setting is configured independently.



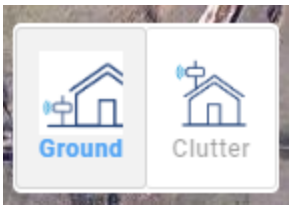

## Height Reference

**URL**: “heightReferenceButton” (ground|clutter)

**Example**: heightReferenceButton=ground

Defines the default option for the AboveGround/AboveClutter toggle button in the bottom-left corner of the map view.

Figure 19: *Height Reference*




## Display Height Slider

**URL**: “showHeightSlider” (true|false|locked)

**Example**: showHeightSlider=false

Toggles the display of the height slider which allows a user to adjust the prediction by filtering out coverage above the set value.

Figure 20: *Display Height Slider*

This value can either be:

- (True) > Shown/Controllable
- (False) > Hidden/Not Controllable
- (Locked) > Shown/Not Controllable

## Height Units

**URL**: “heightUnit” (ft|m)

**Example**: heightUnit=ft

Defines the vertical units used for the height (Meters/FeetFeet/Meters).

Figure 21: *Height Units*

## Height

**URL**: “heightSlider” (0 to 80) ft -OR- (0 to 24.4) m

**Example**: heightSlider=30

Defines the initial height when the map is loaded.

Figure 22: *Height*

## Display Signal Slider

**URL**: “showSignalSlider” (true|false|locked)

**Example**: showSignalSlider=false

Toggles the display of the horizontal signal strength slider in the bottom left of the map view.

Figure 23: *Display Signal Slider*

This value can be one of the following:

- (True) > Shown/Controllable
- (False) > Hidden/Not Controllable
- (Locked) > Shown/Not Controllable

## Signal Strength

**URL**: “signalSlider” (-40 to -100) dBm

**Example**: signalSlider=-72

Defines the initial signal strength when the map is loaded.

Figure 24: *Signal Strength*

## Map Color View

**URL**: “mapColorButton” (signalview|heightview|RRGGBB)

**Example**: mapColorButton=signalview OR mapColorButton=33ff33

Sets the rendering of the heat maps.

Figure 25: *Map Color View*

This value can be one of the following:

- (Signal View) > Default view that shows a Red to Blue heatmap based on the signal strength
- (Height View) > Alternate view that shows a Cyan to Fuscia heatmap based on the install height
- (HTML #RRGGBB) > Simplified view showing a single color for all coverage.

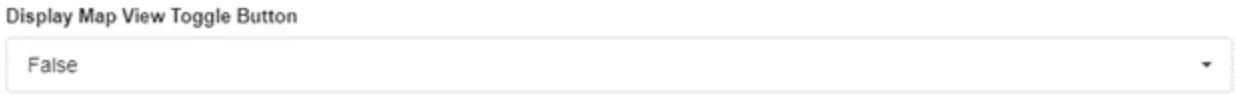
## Display Map View Toggle Button

**URL**: “showMapColorButton” (true|false|locked)

**Example**: showMapColorButton=false

Toggles the display of the map view button that allows users to switch between signal strength and height view.

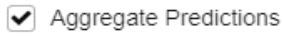
Figure 26: *Display Map View Toggle Button*




## Aggregate Predictions

Works in conjunction with the list of selectable predictions. All selected predictions are merged together on the back end to create a single merged Aggregate Prediction.

Figure 27: *Aggregate Predictions*




**Note**

Predictions are merged in a scheduled job that occurs every night at 00:00 GMT. The first time a set of predictions is aggregated for a project, the user receives the 'Note: Coverage validation is unavailable at this time.' error message until the merge completes. If changes are made to the selection of predictions after this point, the old merged prediction continues to be shown until the new one is available.

**Note**

Aggregated predictions can be shared among multiple tokens. For example, aggregating a subset of predictions for one token, allowing it to merge, and then creating a new token with the same subset of predictions does not require another merge job to run. The aggregated predictions of the first token will automatically be used for the second token.

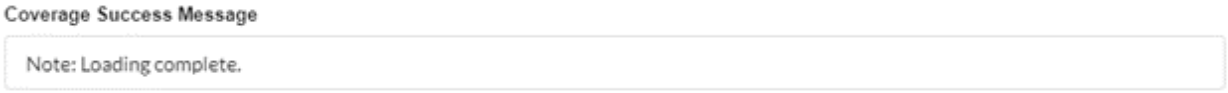
## Coverage Success Message

Displays a success message after all tiles are rendered on the screen. The Aggregate Predictions option must be enabled to activate this menu option.

**Note**

To disable the Success Message altogether, clear the text and update the token.

Figure 28: *Coverage Success Message*



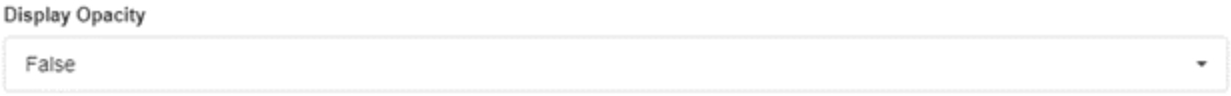

## Display Opacity

**URL**: “showOpacitySlider” (true|false|locked)

**Example**: showOpacitySlider=false

Toggles the display of the opacity slider.

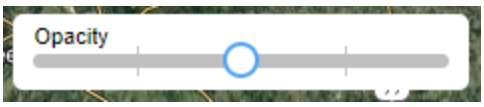
Figure 29: *Display Opacity*




This value can be one of the following:

- (True) > Shown/Controllable
- (False) > Hidden/Not Controllable
- (Locked) > Shown/Not Controllable

Figure 30: *Opacity*




## Opacity Value (%)

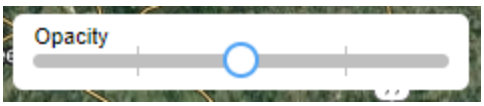
**URL**: “opacitySlider” (0 to 100)%

**Example**: opacitySlider=50

Sets the initial opacity for predictions when the map is loaded.

Figure 31: *Opacity Value (%)*

Figure 32: *Opacity*




## Hide Tower Icons

**URL**: “showTowerIcon” (true|false)

**Example**: showTowerIcon=false

Hides all tower icons, lines, and their labels from the map view and the Point Analysis tool.

Figure 33: *Hide Tower Icons*

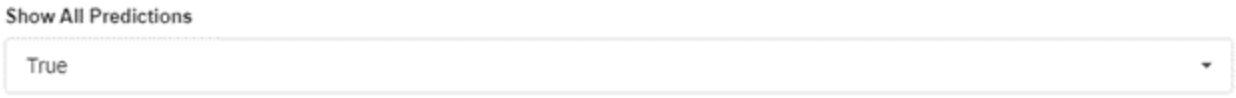
## Show All Predictions

**URL**: “showAllPredictions” (true|false|auto)

**Example**: showAllPredictions=false

Sets the initial display configuration (Show All-active/Hide All-inactive) of the prediction list.

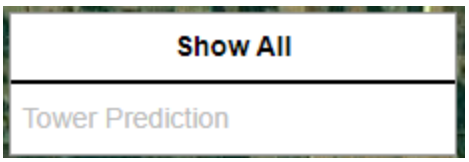
Figure 34: *Show All Predictions*




This value can be one of the following:

- (True) > All predictions are shown(active) by default.
- (False) > All predictions are hidden(inactive) by default.
- (Auto) > Projects with a smaller number of predictions will show(active). For larger projects, the predictions are hidden(inactive) by default.

Figure 35: *Show All*




## Display Prediction List

**URL**: “showPredictionList” (true|false|locked)

**Example**: showPredictionList=false

Displays the prediction list option on the right side of the map view. This affects the visibility of the list and not which predictions are active/inactive.

Figure 36: *Display Prediction List*

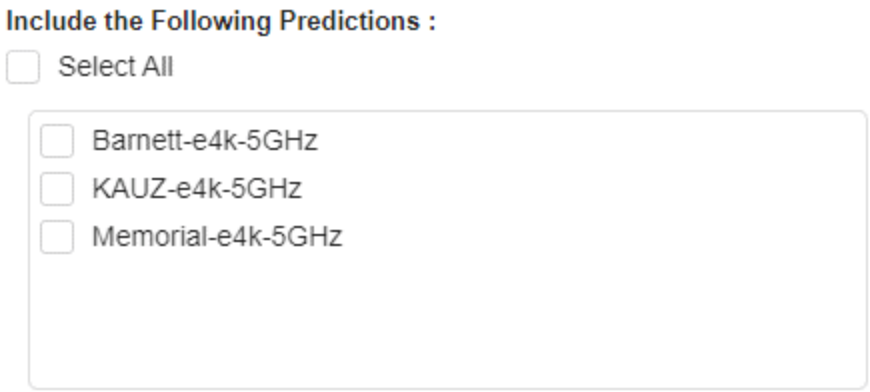
This value can be one of the following:

- (True) > Shown/Controllable
- (False) > Hidden/Not Controllable
- (Locked) > Shown/Not Controllable

## Select Predictions

Allows the user to select predictions to be passed to the map view as options.

Figure 37: *Select Predictions*




**Note**

Predictions that are not selected are entirely hidden or ignored by the embed instance. This functionality operates independently of the towers. To hide towers, use the **Hide Tower Icons** option.

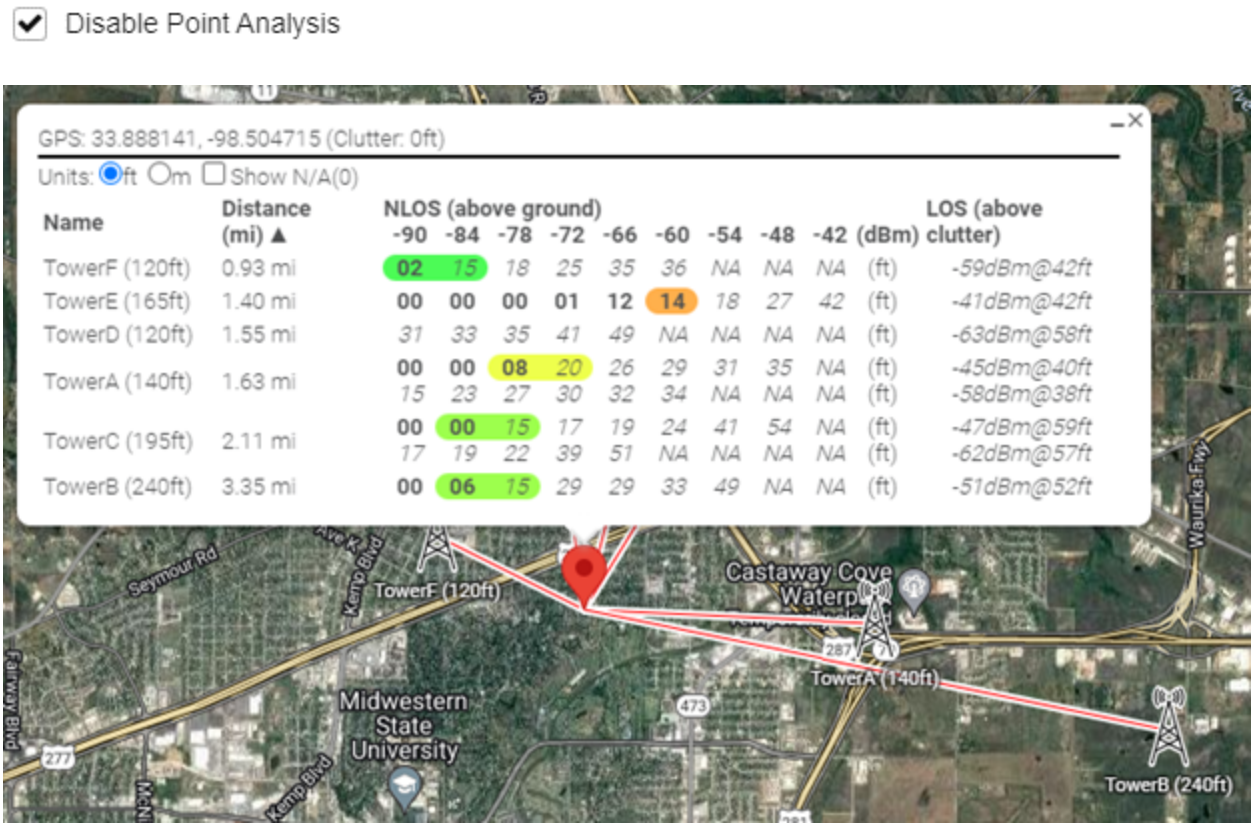
## Disable Point Analysis

**URL**: “disablePointAnalysis” (true|false)

**Example**: disablePointAnalysis=false

The Point Analysis feature returns the signal level available for the selected location at various installation heights. When the **Disable Point Analysis** option is selected, users are unable to left-click on the map to bring up this dialog.

Figure 38: *Disable Point Analysis*




## Define Location for Point Analysis

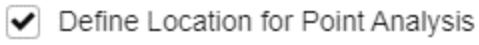
**URL**: N/A – Defining a location with the **pointAnalysisLocation** parameter below automatically enables this option.

**Note**

Requires a location to be defined with the Location option below.

Enables the Point Analysis dialogue on initial map load.

Figure 39: *Define Location for Point Analysis*




## Location

**URL**: “pointAnalysisLocation” (lat/lon or address)

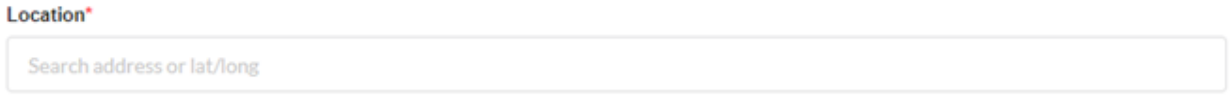
**Example**: pointAnalysisLocation=33.81,-98.43

**Note**

Requires Define Location for Point Analysis to be true with option above.

Defines the location for the point analysis on the initial map view load.

Figure 40: *Point Analysis Location*




This value can be one of the following:

- Lat/Lng
- Address

## Point Analysis Units

**URL**: “pointAnalysisUnit” (ft|m)

**Example**: pointAnalysisUnit=ft

Defines the default units(ft/m) of the **Point Analysis** tool.

Figure 41: *Point Analysis Units*

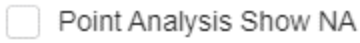
## Point Analysis Show NA

**URL**: “pointAnalysisShowNA” (true|false)

**Example**: pointAnalysisShowNA=true

Sets the Show N/A option of the Point Analysis tool on initial map load.

Figure 42: *Point Analysis Show NA*



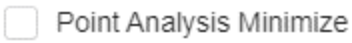

## Point Analysis Minimize

**URL**: “pointAnalysisMinimize” (true|false)

**Example**: pointAnalysisMinimize=true

Minimizes the Point Analysis dialogue on initial map load.

Figure 43: *Point Analysis Minimize*




## Point Analysis Sort

**URL**: “pointAnalysisSortOrder” (nameasc|namedesc|distanceasc|distancedesc')

**Example**: pointAnalysisSortOrder=true

Sets the sort method for the point analysis pop-up.

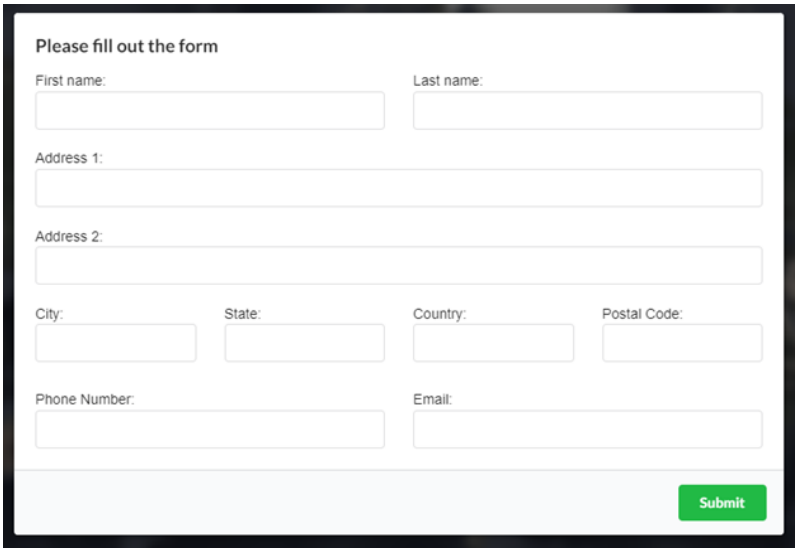
Figure 44: *Point Analysis Sort*

This value can be one of the following:

- Name Asc
- Name Desc
- Distance Asc
- Distance Desc

# Lead generation

Figure 45: *Fill out the form*




## Email

Allows the user to define an email address where the web leads will be sent.

Figure 46: *Email*

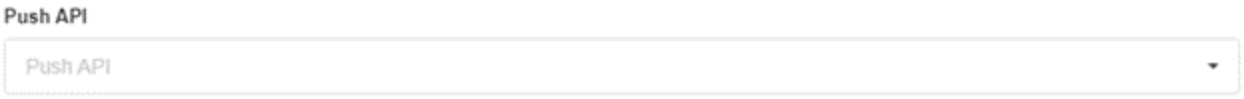
**Note**

Emails arrive from cnheat@cnheat.cambiumnetworks.com.

## Push API

Allows web leads to be pushed to 3rd party systems.

Figure 47: *Push API*




Currently supports the following services:

- Powercode
- Sonar
- Splynx
- Visp

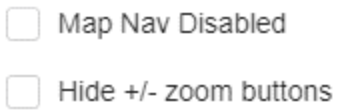
# Appendix A: Web Lead Configuration

While the Embed feature allows for flexibility in the individual control of each component of the map view, the following sections explain the recommended configuration while enabling the Web Lead form.

## Map navigation

Ensure the checkboxes for both **Map Nav Disabled** and **Hide +/- zoom buttons** are not selected.

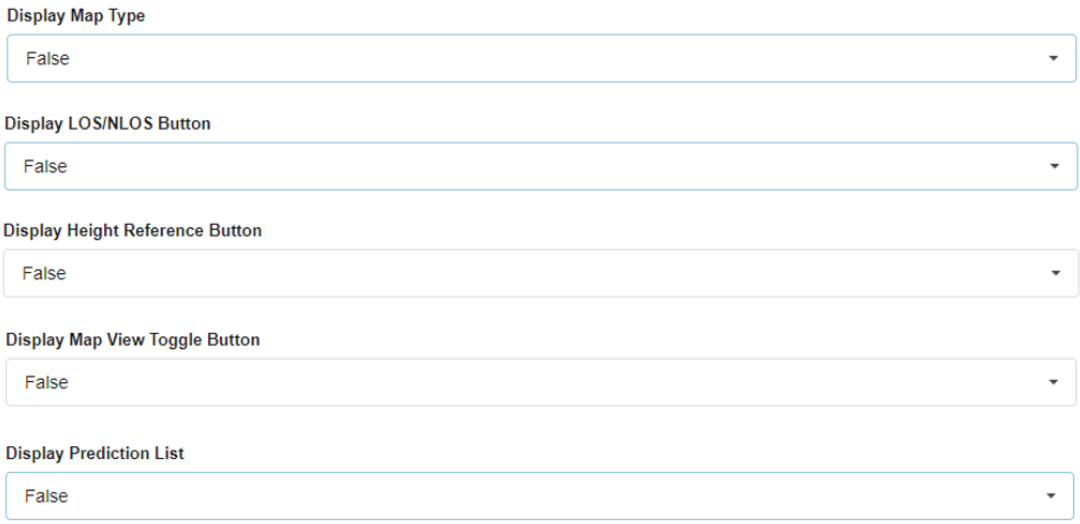
Figure 48: *Map navigation*




## Hidden components

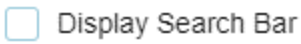
Hide the following components by setting them to **False**.

Figure 49: *Hidden components*




Also, disable the **Display Search Bar** checkbox.

Figure 50: *Display Search Bar*




## Setting the signal strength

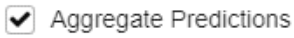
To set the signal strength, perform the following steps:

- Propagation Button > (Either LOS or NLOS)
- Height Reference > (Either Above Ground or Above Clutter)
- Height Units > (Either Feet or Meters)
- Height > (Install height to show in coverage)
- Signal Strength > (Signal level cutoff to show in coverage)

## Configuring the color

To configure a color for shown predictions enable the **Aggregate Predictions** checkbox so that all the layers of coverage are combined into a single layer of coverage.

Figure 51: *Aggregate Predictions*




Configure the **Map Color View** to be a single color with the **HTML #RRGGBB** option and set the color value using the **Single Color Signal Strength** field.

Figure 52: *Map Color View*

## Point Analysis tool

Select **Disable Point Analysis** option to disable the point analysis tool.

Point Analysis tool

## Select predictions to be shown to end users

Any predictions that are created in cnHeat after the configuration of the token must be added manually after they are created.

**Note**

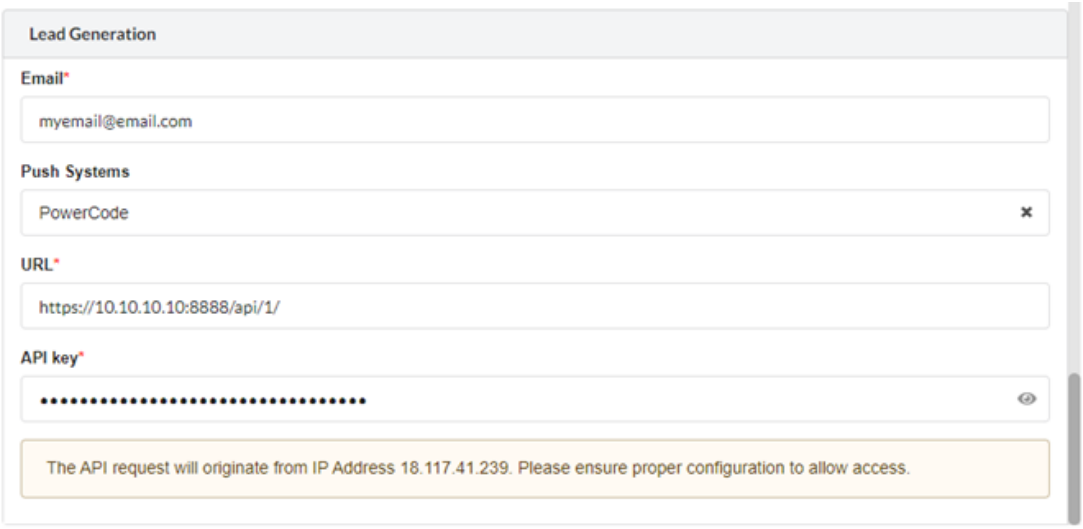
Web Leads are flushed from the cnHeat system after 30 days. If an issue occurs where leads stop propagating through to the operator, then contact cnHeat team (cnheat@cambiumnetworks.com) to ensure leads are not lost.

# Appendix B: Push API

## Powercode

- Follow the instructions outlined in the Powercode documentation to create an API key for cnHeat to use. (https://kb.powercode.com/?ht_kb=powercode-api)
    - Note: Set Source IP to 18.117.41.239.
- In the cnHeat Embed configuration screen, make the following changes:
    - Select **Enable Web Lead Form**.

- Under Lead Generation,
    - Enter the email address that should receive the web lead notifications.
    - Select **Powercode** from the **Push Systems** drop-down menu.
    - Enter the Powercode API endpoint into the URL field.
        - https://<your Powercode domain|IP>/api/1/
    - Copy/paste the API key from the Powercode API configuration page into cnHeat.
    - Click **Update** at the bottom of the Embed configuration screen to save changes.



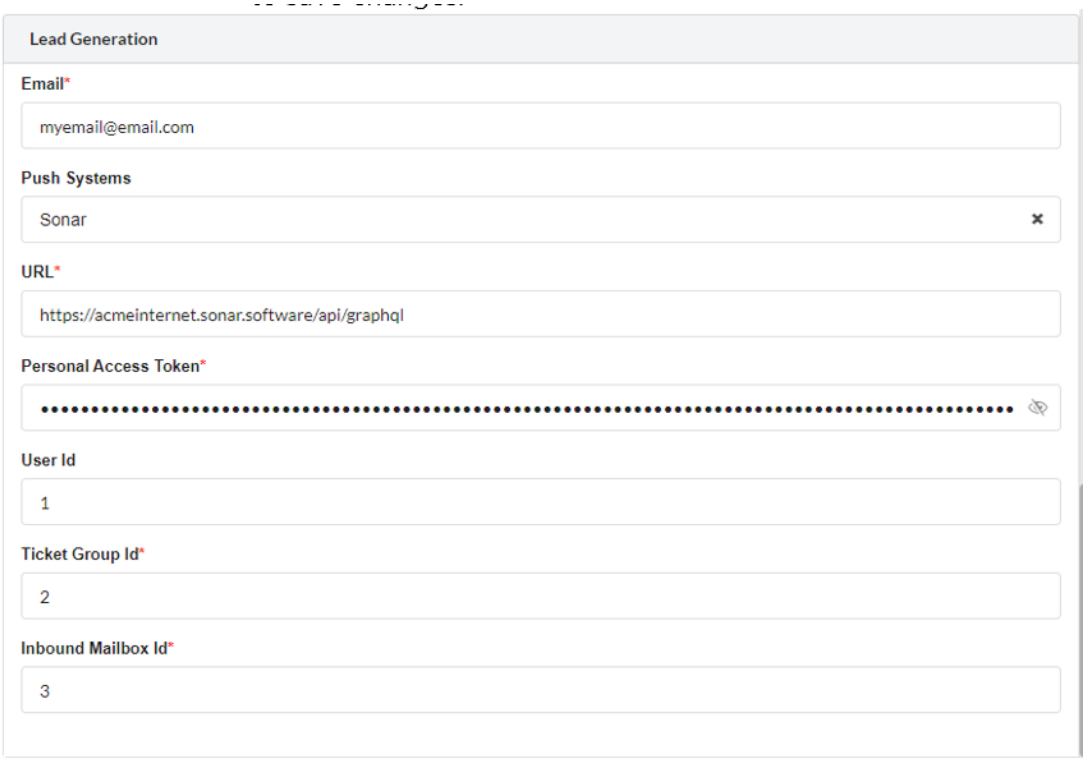

## Sonar

- Follow the instructions outlined in the Sonar documentation to create a Personal Access Token for cnHeat to use. (https://docs.sonar.expert/system/api-calls-using-third-party-applications-

personal-access-tokens)

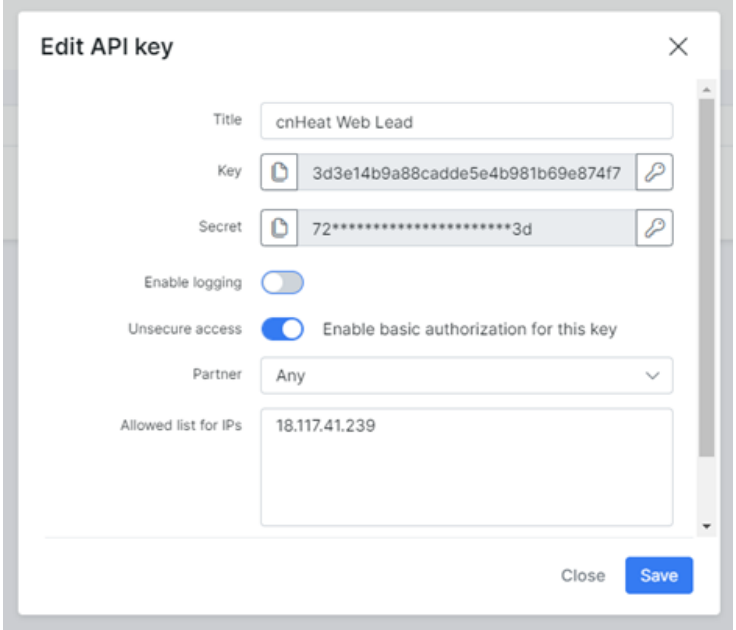
- In the cnHeat Embed configuration screen, make the following changes:
    - Select **Enable Web Lead Form**.

- Under Lead Generation,
    - Enter the email address that should receive the web lead notifications.
    - Select **Sonar** from the **Push Systems** drop-down menu.
    - Enter the Sonar lead API endpoint into the URL field.
        - https://<your Sonar domain>/api/graphql
    - Copy/paste the Personal Access Token from the Sonar Personal Access Token creation page into cnHeat.
    - Enter the appropriate **User Id**, **Ticket Group Id**, and **Inbound Mailbox Id**.
    - Click **Update** at the bottom of the Embed configuration screen to save changes.

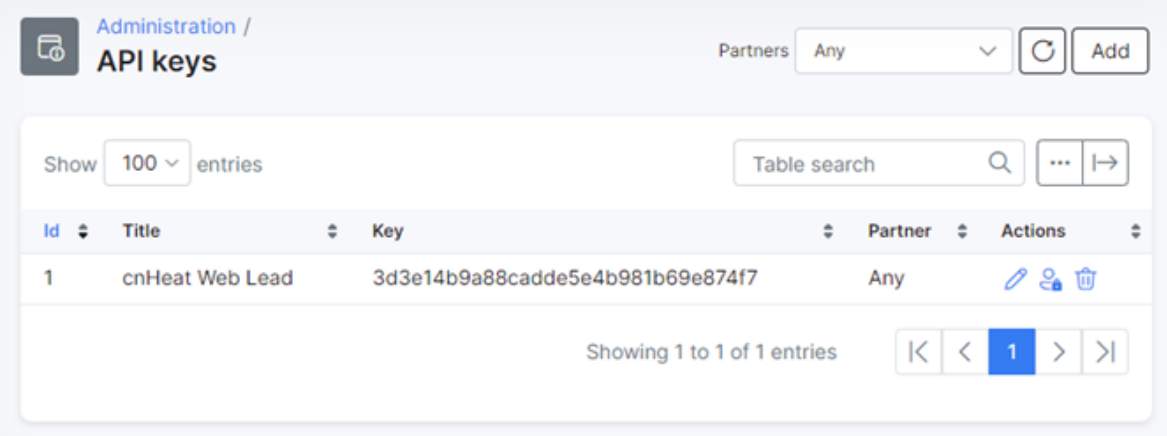


## Splynx

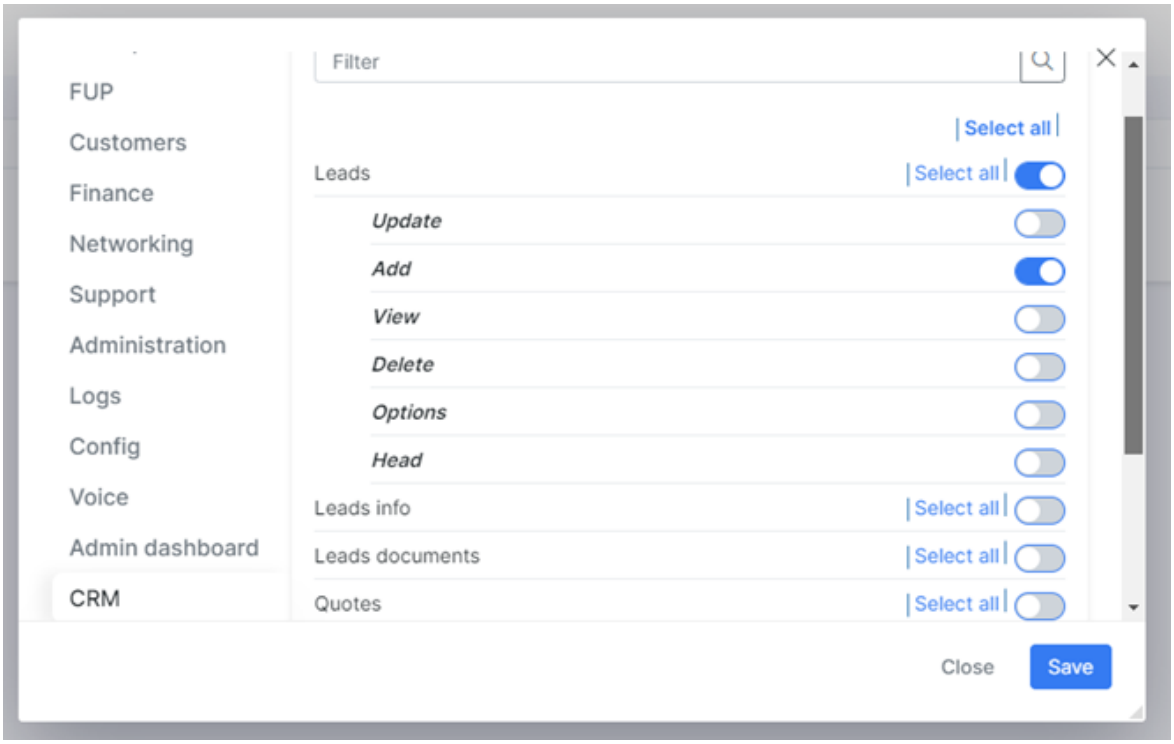
- Follow the instructions outlined in the Splynx documentation to create an API Key for cnHeat to use. (https://wiki.splynx.com/en/4_1/administration/main/api_keys)
    - Enable **Unsecure access**.
    - Add the cnHeat Push System IP Address (18.117.41.239) to the **Allowed list for IPs**.




- Once the API Key has been created the permissions need to be modified to allow adding leads from this key. Click permissions icon for the key.




- Select **CRM** from the left menu and enable **Leads** > **Add** as shown in the figure.

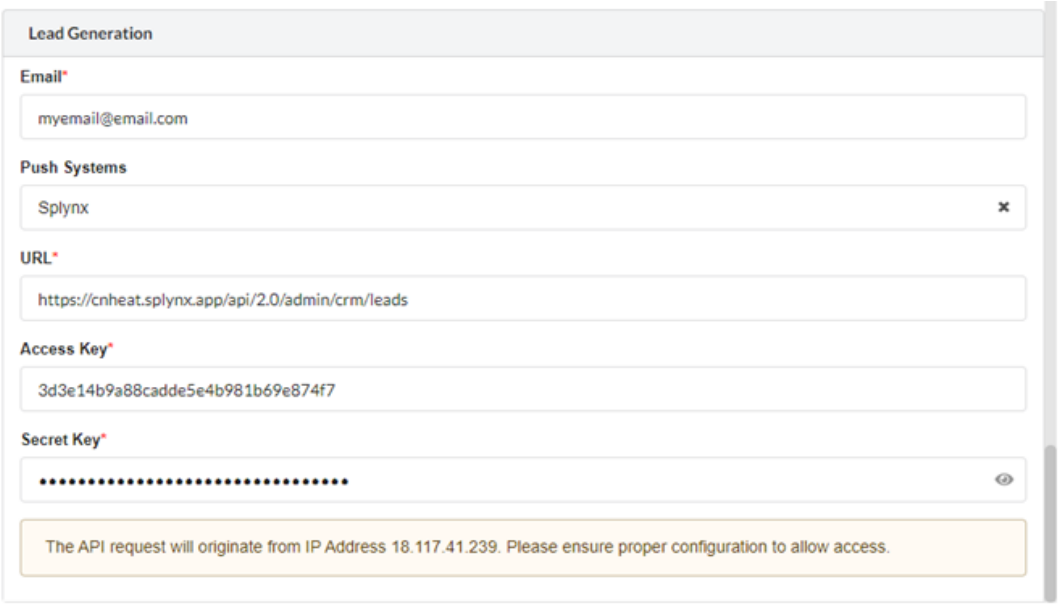



- In the cnHeat Embed configuration screen, make the following changes:
  - Select **Enable Web Lead Form**.

- Under Lead Generation,
  - Enter the email address that should receive the web lead notifications.
  - Select **Splynx** from the **Push Systems** drop-down menu.
  - Enter the Splynx lead API endpoint into the URL field.
    - https://<your Splynx domain>/api/2.0/admin/crm/leads
  - Copy/paste the Access Key from the Splynx API key generation page into cnHeat.
  - Copy/paste the Secret Key from the Splynx API key generation page into cnHeat.

- Click **Update** at the bottom of the Embed configuration screen to save changes.

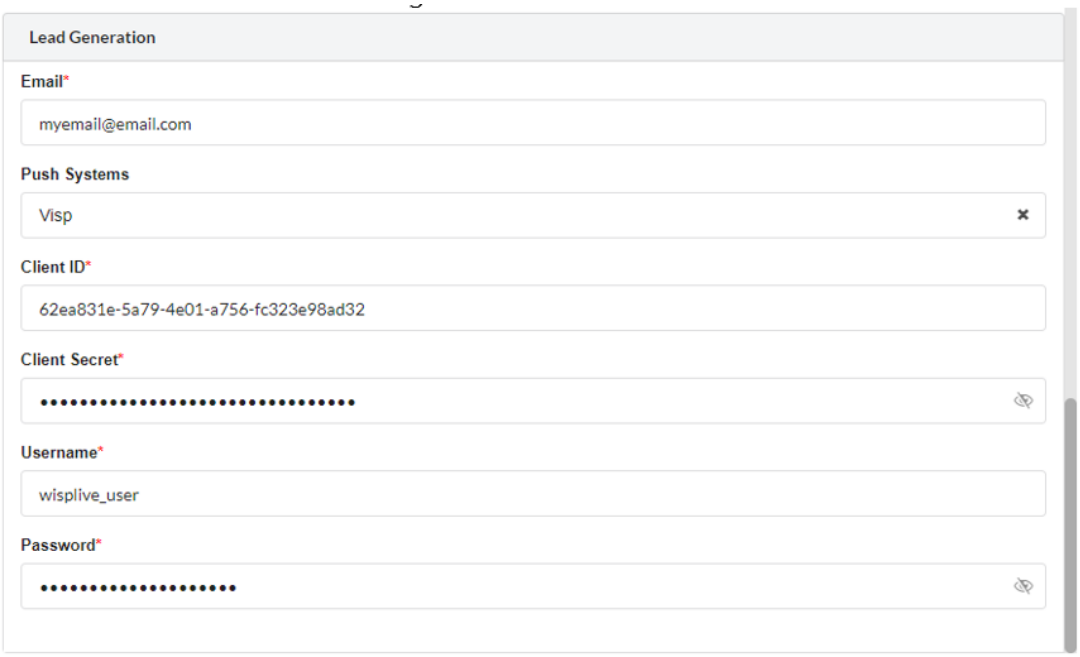



## Visp

- Contact Visp to access a permanent Client ID/Secret. cnHeat uses this in conjunction with your Visp Username/Password to generate an API token on your behalf. (https://graphql.visp.net/reference)
- In the cnHeat Embed configuration screen, make the following changes:
  - Select **Enable Web Lead Form**.

- Under Lead Generation,
  - Enter the email address that should receive the web lead notifications.
  - Select **Visp** from the **Push Systems** drop-down menu.
  - Enter the following Visp information:
    - Client ID
    - Client Secret
    - Username
    - Password

- Click **Update** at the bottom of the Embed configuration screen to save changes.



# Cambium Networks

Cambium Networks delivers wireless communications that work for businesses, communities, and cities worldwide. Millions of our radios are deployed to connect people, places and things with a unified wireless fabric that spans multiple standards and frequencies of fixed wireless and Wi-Fi, all managed centrally via the cloud. Our multi-gigabit wireless fabric offers a compelling value proposition over traditional fiber and alternative wireless solutions. We work with our Cambium certified Connected Partners to deliver purpose built networks for service provider, enterprise, industrial, and government connectivity solutions in urban, suburban, and rural environments, with wireless that just works.

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